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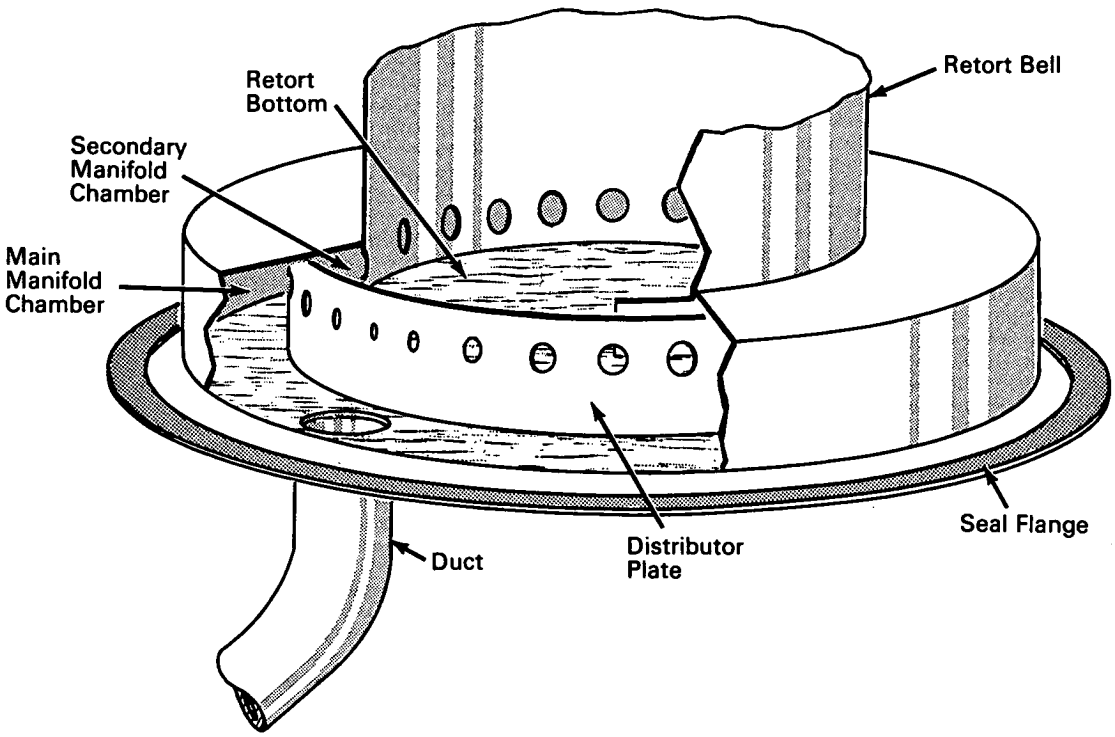
NASA TECH BRIEF

Brazing Retort Manifold Design Concept May Minimize Air Contamination and Enhance Uniform Gas Flow



The problem:

To design a brazing retort manifold which minimizes air contamination, prevents gas entrapment during purging, and provides uniform gas flow into the retort bell.

The solution:

A manifold which is built partly into the retort bell and partly into the retort bottom. When the two components are mated, the resulting manifold configuration provides purging to all manifold areas, exposes only the manifold area to direct air contamination from the seal flange, and supplies gas to the bell through uniformly spaced ports around the lower bell circumference.

How it's done:

When the bell is lowered concentrically onto the retort bottom the main manifold chamber and the

(continued overleaf)

secondary manifold chamber are formed, separated by a distributor plate. The lips of the flange are mated with the seal flange area leading directly into the main chamber.

Gas is supplied to the main chamber through the duct. The main chamber then supplies gas to the secondary chamber through holes formed around the circumference of the distributor plate. These holes are progressively larger as their distance from the duct increases. Gas is supplied to the bell through holes which are equally spaced around the circumference of the bell.

During purging operations, whether the purging gas flows through the duct into the bell or from the bell out through the duct, little gas entrapment can result since the holes located near the top of the main chamber provide positive flow through the entire volume of the main chamber.

Any air leakage through the seal flange flows directly to the exhaust duct. The main bell is thus far removed from air leakage. The circumferential holes in the distributor plate and the bell deliver a uniform gas supply through the entire circumference of the main bell.

Notes:

1. Further advantages of this manifold include the following: (a) ease of manifold cleaning, and (b) minimum turbulence within the bell, since all manifold construction lies outside the main enclosure.
2. This manifold design is still in the concept stage, and has not yet been reduced to practice.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B66-10371

Patent status:

No patent action is contemplated by NASA.

Source: Emil P. Ruppe
of North American Aviation, Inc.
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